

## REPORT

OF THE

## EXPLORATION OF TWO PASSES

THROUGH THE

# ROCKY MOUNTAINS.

IN

1858.

BY CAPTAIN T. W. BLAKISTON,

ROYAL ARTILLERY.



WOOLWICH:

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To H. MERIVALE, Esq., *Under Secretary of State for the Colonies.*

SIR,

13, Ashley Place, April 18, 1859.

I have the honor to enclose a Report which I have received by post from Captain Blakiston of the Royal Artillery, with a request that it should be transmitted for the information of H.M. Government.

The Report, with Map and Sections, states the particulars of Captain Blakiston's Exploration of the Kootanie and Boundary Passes of the Rocky Mountains; the first known only by name, and the second unknown, except to the native Indians; the Kootanie Pass proving to be the most southern, and by far the shortest yet known in the British territory.

I have at the same time received from Captain Blakiston a continuation of the magnetic observations which constituted his special duty, up to the date of the transmission of his letter. These evince the same care and skill which have characterised his former observations. The results will be laid before the Royal Society, as those of his earlier observations have been.

In the successful conduct of the Exploration confided to him by Mr Palliser, Captain Blakiston has had an opportunity of manifesting his desire and capability of contributing towards the accomplishment of the Geographical objects of the Expedition, which will, I trust, obtain for him the approval of H.M. Government.

(Signed) EDWARD SABINE,

Major-General, R.A.

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*Report, on the Exploration of the Kootanie and Boundary Passes of the Rocky Mountains in 1858. By Captain BLAKISTON, Royal Artillery.*

On the 12th of August, 1858, I left the camp of the main body of the Exploring Expedition at the site of Bow Fort, base of the Rocky Mountains, lat.  $51^{\circ}9'N.$ , long.  $115^{\circ}20'W.$ , and after crossing the Bow River by a ford about four miles above that point, I gained ground to the eastward, so as to get clear of the broken and wooded country on the edge of the mountains.

My party consisted of three Red River half-breed voyageurs, Thomas Sinclair, Amable Hogg, and Charles Racette, besides a Thickwood Cree Indian "James," whom I had engaged as hunter to the party. I had ten horses, five of which were used for riding, and the rest carried the packs, containing a quantity of ball and powder, tobacco, a few knives, and other articles of small value for Indian trade; also, some dried meat and pemmican, with tea, sugar, and salt, as well as two boxes containing my instruments, books, &c.

Soon after leaving Bow River, we crossed one of its tributaries, the Kananaskis or Lake River, a rapid stream coming out of the mountains

from the south-west; here we saw the remains of many wooden carts, which had been abandoned by a party of emigrants from Red River Settlement, under the late Mr James Sinclair, on their way to the Columbia, in 1854, who had found it impossible to drag them farther into the mountains. This pass, I believe, follows the course of the river to its source, and is the one by which Sir George Simpson, governor of the territories of the Hudson's Bay Company, as well as another party of emigrants crossed in the Rocky Mountains in 1841. In the past season it was travelled by Mr Palliser.

The forests consist of spruce (*abies alba*), a small pine (*p. banksiana*), and another rough-looking *abies* which grows to a large size, also a few balsam poplar, and aspen. In travelling through these mountain forests, the greatest obstruction is the fallen timber, which lying about in all directions, causes much exertion to the horses, and confines them to a slow pace. During this first day's travel that I noticed the devastating effects of atempest; numbers of trees had been blown down, and many broken short off. The work of destruction had evidently been of this year, but there were also signs of former work of the same character.

The following day, our course still tending a good deal to the eastward, carried us farther and farther from the mountains, but we passed within twelve miles of a marked outlier, which from its peculiar form, I called "The Family." After this as we travelled along through a partially wooded country, and receding from the near hills which obstructed the view, a sharp peak entirely covered with snow, opened to us at about forty miles distance. The wind was from the westward, and to the east of the summit of the peak rested a mass of white cloud, which was very marked, for there were no other clouds to be seen, with the exception of a few light cirri over head. This attending cloud gave the mountain the appearance of an active volcano, and the effect against the clear sky was extremely beautiful. The phenomenon was caused by the aqueous vapour of the warm Pacific breeze, being condensed by the coldness of the snow, and appearing as a cloud to the leeward of the peak. I took careful bearings of this mountain, to which I gave the name of "The Pyramid."

We camped at the forks of a creek, called by our hunter the "Strong Current." Here he was successful enough to procure a few fine mountain trout, which proved a very agreeable change to our ordinary fare, which consisted of dried buffalo meat, containing by no means too large a proportion of fat, washed down by tea. Bread was not in our bill of fare, and I may here state, that during the whole summer while travelling, with the exception of two Sundays, I never tasted a morsel of farinaceous food. This may appear astonishing, but when continually travelling, with the appetite sharpened by a ride over the prairie in the cool breeze of the mountains, one becomes accustomed to do without flour, salt, sugar, &c., which under other circumstances would be considered indispensable.

The next day was Saturday; we rose early, packed the horses, and made a start as usual about sunrise, and travelled on through much the same sort of country, the up-lands being generally wooded, while the bottoms were partially covered by scrub willow and other bushes. We halted between 8 and 9 a.m. for breakfast, giving the horses a "spell" of a couple of hours or so; then started again, and gained a somewhat elevated position, from which we had an extensive view of a fine valley, watered by two clear moun-

tain streams, which as they neared the edge of the great plains, stretching probably without break for 700 miles eastward, united, and with mingled waters, pursued their course towards Bow River, ultimately to pour themselves into the icy basin of Hudson's Bay. I continued on till we reached the southernmost of the two creeks, within ten yards of which, under the shade of some fine poplars, I pitched my small patrol tent. The valley bottom was a fine piece of prairie pasture for the horses, and presented a most suitable resting-place for a Sunday camp. I had (for it was only two o'clock), halted in sufficient time to allow me to obtain an observation of the sun during the afternoon for comparison with one I hoped to obtain on the morrow, and so rate my chronometer. This important instrument was carried each day, turn about, by one of the men, who for that day did nothing else but carry it as carefully as possible. I would recommend this plan to future explorers. In a large party, a few of the steadier hands should be selected for this service; but the same man should never be obliged to carry the instrument every day, lest he become careless.

My ordinary mode of travelling, gave the horses six to seven hours' work per day, with the exception of Sundays. Frequently I halted from breakfast till noon, in order to obtain an observation for latitude, in which case I camped later. I never, however, gave up the plan which I adopted from the first, of making an early start, and getting the best part of the day's work over before noon. There are many reasons in favour of it. The horses were mostly Indian ponies, which are hardy and work well on grass. They grow somewhat lean while living out during the severe winter weather, but fatten rapidly with the appearance of the new grass in the spring. They are not accustomed to shoes, but I had some on three of them, whose feet I considered too much worn down for the rocky ground of the mountains. On camping, the horses after being watered, are left to themselves for the night, the fore legs of those likely to wander being hobbled with a piece of soft leather. They are very sagacious in following a trail. The 15th of August was a Sunday. While continually travelling, it will be found that rest one day in seven is required by man and horse, the former taking advantage of it to wash and mend clothes.

The weather continued fine, and this day the thermometer rose to 85° in the shade, with a clear sky, and fresh breeze off the mountains in the afternoon, the day closing with a calm evening. This mountain breeze appears to be a regular occurrence during the fine summer weather of this season. On each of three successive days of fine weather which we enjoyed at the site of Bow Fort, the morning was calm, at about 7½ a.m. the wind commenced lightly from about w.s.w. off the mountains, and gradually increasing in the middle of the day and afternoon it blew a fresh breeze from the same point, with usually some *cumuli* over the mountains, which disappeared before reaching the plains; in the evening the wind fell, and the night was calm. The explanation of this phenomena is the same as that of the sea breeze so unvarying in tropical islands, namely, that as the sun gains altitude, the great plains which are entirely prairie become heated and, consequently, the air in contact with them ascends and is replaced by the cooler air from the mountains.

Our general course for the next three days was a point east of south, for we were now as far out from the mountains as our Indian thought requisite.

We were, however, within the outlying ridges, which are numerous, and all run parallel to the larger ranges of the great chain, namely, s.s.e. Thus travelling the course we were on, we had very seldom to surmount any high land, but passed along the valleys between these ridges.

The country was less wooded than that previously passed, being for a considerable part, fine prairie slopes. The main range or watershed, as I supposed it to be, was occasionally visible, through gaps in the nearer mountains, at a distance of about thirty miles.

On the 16th our hunter was lucky enough to procure us some fresh meat in the shape of a wapiti or wa-waskasew (red deer) of the Crees. In order to lighten the burthen of the horses and preserve the meat, the bones were taken out, and it was cut into thin flakes and half-dried over the night camp fire.

The same afternoon, as we arrived at Trap Creek, just above its junction with High Woods River, we found six tents of Thickwood Stone Indians who were just preparing their encampment. We camped along with them, and as usual, when with or near any Indians, my flag, a St George's Jack, was hoisted on a pole in front of the tent. I gave them a present of some tobacco and fresh meat. These Stone Indians, with whom are associated also a few Crees, and whose hunting ground is the wooded and semi-wooded country along the base of the mountains ~~at the headwaters~~ of the Saskatchewan, are a harmless and well disposed people towards the whites. Education has, thanks to the former Wesleyan missionary, the Rev. Mr Rendall, and his successor the Rev. Thomas Wolsey, made some little progress amongst them; a few being able to read and write the Cree syllabic characters, now in general use among the missions of the north-west.

During the afternoon I held a talk with these Indians. I told them plainly for what reason we had been sent to the country; that Her Majesty was always glad to hear of their welfare, and that any message which they might have for her, I would take down in writing.

"We are glad," said an old man, "that the great woman Chief of the Whites takes compassion upon us, we think she is ignorant of the way in which the traders treat us; they give us very little goods and ammunition for our furs and skins, and if this continues our children cannot live. We are poor, but we work well for the whites. The Indians of the plains treat us badly and steal our horses, but we do nothing to them, for the minister tells us so." In answer to questions from myself, they said that they would wish white people to come and live among them, and teach them to farm, make clothes, &c., so that "their children might live," for the animals are getting every year more scarce. I may here state, that I have been fortunate enough this year to fall in with many camps of the different tribes of Indians inhabiting this country, from whom I always obtained as much information as possible on their present state, and their wishes as to the future; and I hope to draw up a report on the same for the information of H.M. Government; for without doubt, when deciding on the future of this country, some provision should be made for the poor uncivilized beings, to whom by right the soil belongs.

From these Indians I obtained a pair of saddle-bags of which I was in want, and by giving in boot a little ammunition and tobacco, I changed a

(at the headwaters)

lame horse which I had brought with me for that purpose, for a good strong Indian pony.

Crossing Spetchee or High-woods River on leaving the Indians in the morning, we travelled over undulating prairie all the forenoon, crossing another tributary of this river. During the latter part of the day, we passed through a narrow wooded ravine between rugged hills, covered with burned forest, and camped on a small creek. Here I determined to make a cache. Therefore selecting a good thick spruce tree, we enclosed in a box some ammunition, tobacco, and a few other things, which with half the bag of pemmican which still remained intact, rolled up in a piece of buffalo robe, we suspended from a branch about fifteen feet from the ground.

We were delayed some time next morning by some of the horses having strayed a distance into the woods during the night; however, when found they were quickly unhobbled, saddled, and packed, and we started not very long after our usual hour. The Indian trail led between numerous wooded ridges, but the greater part of the wood was burned. The soil of the valleys was usually a deep dark mould, supporting a luxuriant vegetation of the smaller plants. This is the nature of most of these mountain valleys. Where the strata are upheaved to the surface, the ground is of course rocky; such is, however, not often the case in the valleys, but the lines of strata running along the ridges are distinctly visible even when the grass is growing, owing to the difference of colour of the grass on the almost bare rock. The strata run in the direction of the ridges, namely, a little east of south, and usually dip from, but in some few cases towards, the mountains, and at a considerable vertical angle.

In the afternoon we passed close on the left hand a very remarkable feature; it was a mass of rock projecting upwards from the top of a hill, and visible at a considerable distance; from its peculiar form I called it the "Chopping Block." Soon after, we gained the height of land between the waters of the Spetchee and Mocowans, or Belly River, and the wide prairie valley of the latter broke upon our view. We descended a short distance and camped at the first wood and water.

Before gaining Belly River in the morning, the quick and practised eye of the Indian caught sight of a herd of buffalo in the valley, he therefore went ahead, and by the time we had halted on the river, and I had obtained an observation, he had killed one animal. I remained here until noon, in order to obtain a meridian altitude, and so complete my observation for latitude and longitude, occupying a portion of the time in measuring the heights of the successive river levels with the aneroid barometer.

These "river levels" are a very general feature in this portion of the Western Continent; I have observed them on all parts of the Saskatchewan above the forks, and its tributaries issuing from the Rocky Mountains, as well as on the Kootanie fork of the Columbia on the west side, and the Flathead River in the mountains, from an altitude of 1000 to upwards of 4200 feet above the sea. They are in some places very marked, and appear as a succession of steps from the bed of the river to the level of the plain above, often in sight for miles, and running horizontally along either side. The tread of the step is of greater or lesser width, the rise nearly always abrupt and well marked. They were very decided in the valley of Bow River at the base of the mountains, where they appeared cut with mathematical accuracy:

The levels measured at Belly River were :—

	Above the sea.
Present bed of the river.....	4024
1st. river level .....	4085
2nd. „ .....	4176
3rd. the level of the valley.....	4226

These river levels are for the most part, on the lower portions of the branches of the Saskatchewan, on a somewhat larger scale in vertical height, than near the sources.

I was now on Belly River at about the same altitude as on Bow River at the site of Bow Fort, namely, 4000 feet above the sea, although eighty-seven miles (geographical) in a direct line s.s.e. from it. From this point the route of the party may be traced on the plan attached to this report. The plan does not include the country to the northward, which has no connection with the passes reported upon. I have, however, the whole country mapped on a smaller scale.

The bed and sides of this river are rocky, the strata of hard gray sandstone, much inclined, and the current obstructed in places by immense granite boulders. We found no difficulty in crossing, the water though running swiftly, being not deeper than three feet, and about 25 yards across.

Looking through the gap in the near range through which the river issues, I saw a conspicuously dome-shaped mountain. It afterwards proved to be when seen from the plains, and also from the top of a mountain in the Kootanie pass, the highest and almost only peak rising above the others in this part of the mountains. After the distinguished British naturalist, I named it "Gould's Dome." The gap through which I had seen this mountain was in the eastern or near range, of very regular form, extending, with the exception of this gap, for a distance of five and twenty miles without break. The crest of the range was of so regular a form, that no point could be selected as a peak, I therefore gave the whole the name of "Livingston's Range;" it is a very marked feature when seen from the forks of Belly River and the plain outside.

On leaving Belly River we rose considerably, and keeping along under Livingston's Range, the sun had dropped behind this great curtain before we camped. The spot was 540 feet above Belly River which we had left behind to the northward. Looking to the mountains ahead of us, I picked out the most prominent, and took bearings of them before the Indian who was in the rear hunting, came up. There were two near one another bearing thirty miles south, one of which, from the resemblance to a castle on its summit, I named "Castle Mountain;" to the East of these, but at a greater distance a portion of the Mountains stretched out to the eastward. From reports which I had previously heard, I took the most easterly one standing by itself to be the "Chief's Mountain," which the Indian on coming up confirmed, and pointed out the place where on the morrow we should turn into the mountains.

This offset range occurs, as I afterwards discovered, just at the 49th parallel or International Boundary line.

The morning of the 20th of August was thick and hazy, with occasional showers of rain, which entirely prevented me from obtaining the good view



of the country which I had hoped for, having seen but little in the uncertain light of the previous evening. I therefore travelled on, crossed Crow Nest River, and soon after noon gained the entrance of the Kootanie pass, where another of the branches of Belly River issues from the mountains. Here we struck a narrow but tolerably well-beaten track, which the Indian informed us was the Kootanie trail, by which the Indians had crossed the mountains the past spring. Making a turn therefore to the w.s.w., nearly at right angles to our former course, we followed this track which led up a narrow valley along the left bank of the river and between high wooded hills; the travelling was good, for we were on the even grassy river levels, and we camped at a spot where a small mountain stream entered the river from the north.

We were now fairly in the mountains, and had already overpassed the spot where our Indian guide knew anything of the road but by report; he knew that if all went right we should be some three or four days in crossing, and had been told that there was but one track, and that we were not likely to miss it. It may be asked, why was I without a guide? The fact was, that a guide had been allotted to me by Mr Palliser, but on leaving the camp of the Expedition on Bow River, I had started without him on account of the sickness of his wife. He promised to start the following morning and overtake the party; which he failed to do. It will be seen subsequently, however, that I did not suffer by his absence, and I am now glad that he was not of the party, for I have no great faith in the so called "guides," and think they are seldom worth their pay.

The entrance of this pass is in latitude  $49^{\circ} 34' N.$ , and longitude  $114^{\circ} 34' W.$  being (consequently) forty English miles north of the Boundary line. I have omitted to insert the latitude and longitude of points where I obtained observations, because by referring to the map, the geographical position of any place may be seen.

We started at 5.40 in the morning with the sky overcast, and a drizzling rain, and soon entered thick woods and uneven ground, with a great many fallen trees, which caused the horses to travel slowly. We continued travelling in this way and gradually ascending along the course of a small creek running into Railway River, which we had left where the trail parted from it; this river was so named by me from the striking advantage offered by its "levels" for the entry of a railway into the mountains. Gradually the stream became less and less until after gaining considerable altitude it dwindled into a small quantity of water falling in a cascade. Here we passed Hero's Cliff, an enormous vertical escarpment, facing the east, of hard red sandstone or quartzite, with the strata dipping at least  $45^{\circ}$  to the west. We now rose rapidly as will be seen by reference to Section, No. 1 (the Kootanie Pass); the trees became smaller, and we soon reached the region of rock and alpine plants; here were some large patches of snow and a couple of ponds of clear water; we passed over a quantity of debris of hard grey limestone of which the peaks on our right hand, namely, to the N.W., were composed. As we were now clear of all shelter, we felt the cold damp east wind, which blew a fresh breeze, and drove along scudding clouds which prevented any extensive view. We were now on the watershed of the mountains, the great axis of America; a few steps farther and I gave a loud shout as I caught the first glimpse, in a deep valley as it were at my feet, of a feeder of the Pacific Ocean. It was the Flathead River, a tributary of the Columbia. At the

same moment the shots of my men's guns echoing among the rocks announced the passage of the first white man over the Kootanie Pass. I halted for the purpose of reading the barometer, which shewed an altitude of 5960 feet. It was just five hours since leaving our previous night's camp, at an altitude of 4100 feet.

This is no place for a dissertation on the physical geography of North America, but I may simply state, that in that portion of the Rocky Mountains, comprised between the parallels of  $45^{\circ}$  and  $54^{\circ}$  north latitude, rise the four great rivers of the continent, namely, the Mackenzie, running north to the Arctic Ocean, the Saskatchewan east to Hudson's Bay, the Columbia west to the Pacific, and the Missouri south to the Gulf of Mexico; thus we may say, that in a certain sense that portion of the mountains is the culminating point of North America, and I now, on the Kootanie Pass, stood as nearly as possible in the centre of it.

A rapid descent of two hours brought us to the Flathead River, a clear and quick running stream, dividing a beautiful partially wooded valley enclosed by mountains; here we halted soon after mid-day, having passed the great watershed, and descended again 1400 feet without breakfast.

During Sunday I did not move from my pleasant camp, where was wood, good water, and good pasturage, everything to be desired by the traveller. I was engaged in obtaining observations for latitude and longitude, and computing them, writing up my notes, &c.; and I also made a sketch of the mountains over which we had passed the previous day. The men brought in some ducks, grouse, and trout, which made an agreeable change in our diet; two or three humming birds were seen about the camp.

The track now led up to the course of Flathead River, through thick forests with occasional openings, crossing several mountain streams, feeders of the river. We halted for breakfast on an open piece of swampy ground. On moving on again we plunged into thick forest, where the track was greatly obstructed by fallen timber. The Kootanies cut through a good many of the fallen sticks to allow of the passage of the horses, but still the greater number remain as they fall, and cause much twisting, turning, and branching of the track. We ascended gradually, passing a few fine pieces of open meadow, until we arrived near the head waters of the river, when the different streams composing it became mere mountain torrents. Here we commenced a steep ascent, the path ascending in a zig-zag up the hill; the trees, mostly spruce and fir, became smaller until we gained the summit of this knife-like ridge, from which an extensive view of the mountains was obtained. I halted to contemplate the scene, take bearings, and read the barometer, which shewed an altitude of 6100 feet. All appeared, however, utter confusion, such slight differences were there between the different mountains and ridges. One peak alone shewed itself above the general surface. It lay to the northward about thirty miles distant, and I recognised it as "Gould's Dome," which I had previously remarked from the edge of the plains. I estimated it to be not more than 1000 feet above my present position which would give it an altitude of about 7000 feet. The rest of the mountains appeared all about the same level, and but few of greater altitude than the ridge from which I surveyed them; there were visible the main range or watershed, then a number of ridges and mountains densely wooded, and of somewhat less elevation; after which, to the westward, higher mountains,

the ranges generally taking a N.N.W. and S.S.E. direction. Such was the scene to the north of my position, but to the southward the mountains appeared to have no general direction, as many running crosswise as lengthwise. I was now on a height of land between two branches of the Columbia; the rock was the same hard grey sandstone as observed all along the base of the mountains on the east side, no granite shewing anywhere.

Heavy dark clouds were gathering rapidly, and the louder and louder rumblings of thunder warned us of an approaching storm. We had descended but a few yards of the great western slope when the tempest broke with all its violence, and we were wet to the skin in a few moments; my own habiliments were far from waterproof, being simply a flannel shirt, and pair of leather trowsers, with a striped cotton shirt over all. The descent was very steep, the horses having in some places difficulty in keeping their legs, although the path was zig-zag; and the continual descending on foot was very trying to the legs. After some distance, however, the descent became less steep, and we continued our course for a couple of hours before coming to any place fit for camping. Although camping in the woods is always to be avoided with horses, we were at length induced to halt from the appearance of some old skeletons of Indian lodges, not knowing how far we might have to travel before coming to any open place; and we camped, for the first time, in a Columbian forest.

The change in the vegetation was first made evident to me on descending the mountain, by the appearance of a beautiful and regularly formed cedar, which for the sake of remembering the tree, I then called the "Columbian Cedar." It flourished at an altitude of about 5000 feet, and I subsequently observed it as low as 3000, but I feel doubtful as to whether it descends to the Tobacco Plains. Besides this I found, to me, a new *abies* something like the Balsam Fir of the Atlantic slope, but with a rough bark, and growing to a large size; the Spruce and supposed Bank's Pine remained with a few Balsam Poplar and Birch, some of good size; also Maple and Alder as underwood. A new Larch appeared, an elegant tree; and around our camp were the dead stems of many deprived of life, no doubt in years past by fire, rising to an immense height, and tapering upwards perfectly straight, without a limb, to a fine point.

The next day we travelled on through these forest, continually descending, and before noon arrived at Wigwam River, where it passes between two high rocky hills, which, from their imposing appearance from this spot I called the North and South Bluffs. The bed of the river was deeply cut in the valley and exposed grand sand cliffs from two to three hundred feet in height, portions of these cliffs were broken, and pinnacles and blocks of different forms were left, having at a short distance a most fantastic appearance. The track leaving the river and ascending a steep bank, carried us for five miles over a very rocky piece of country, where the trees were of stunted growth from want of soil, to the junction of Wigwam River with the Kootanie Fork of the Columbia. The former was forty yards wide and two to three feet deep, and the latter sixty yards across with a depth of four to six feet, both running with a swift current, their beds being rocky and stony. The Kootanie Fork could be seen coming down a valley from the N.N.W., from near a well marked mountain about twenty-seven miles distant, which has been called "The Steeples" or ~~Mount Sable~~. I believe that not far

above the Wigwam tributary another called the Elk River comes in from the north, down a long narrow valley in the mountains. We descended about 300 feet, crossed the small river, and having lost the trail, camped for the night, the Indian's opinion being that we must also cross the main river, which would have occupied more time than the decreasing daylight would allow us. On going lower down the river in search of a better crossing place, I luckily struck on the proper trail leading up the side of the river bank towards the south; so we turned in that night with the satisfaction that we were still to travel in the morning on dry land.

To the west of us, on the other side of the river, was a level, partially wooded country, a portion of the Tobacco Plains, which as will be seen by reference to the plan, is a tract of country of about ten miles in width, stretching from near Mount Sabine on the north, to the southward of the Boundary Line, bounded on the west by low wooded hills, and skirting the foot of Galton's Range on the east. The Kootanie Fork in its southern course, after the entry of Wigwam River, traverses these plains.

Being now at the western extremity of the Kootanie Pass, I will pause to point out the capabilities it affords for a railway across the mountains within the British possessions. I should premise that I have not sufficient evidence to be able to state that the Kootanie Pass is absolutely the most advantageous place for the crossing of a railroad from the Saskatchewan Plains to the Pacific, because the mountains to the north have not yet been sufficiently explored; but I am able to say that it is the most southern line within the British territory, and, as yet, by far the shortest; moreover, I have every reason to believe, that the most suitable portion of the mountains for the passage of a railroad will be found to the south of Bow River.

The Kootanie Pass crosses the Rocky Mountains from the Great Saskatchewan Plains on the east, to the Tobacco Plains on the west, its extremity on the former side being forty, and on the latter, eighteen English miles, to the northward of the International Boundary, the 49th parallel of N. latitude. Its length is 40 geographical, or nearly 47 English miles, extending from longitude  $114^{\circ}34'$  to  $115^{\circ}24'$  W. It leaves the Saskatchewan Plains where they have an altitude of about 4000 feet above the sea, rises 2000 feet to the watershed of the mountains, descends to Flathead River, again to an altitude of 4000, follows up this river to its head waters, then crosses a precipitous ridge, reaching an altitude of 6000 feet; it then descends the great western slope, falling 2000 feet in two miles of horizontal distance, after which, by a nearly uniform grade of 100 feet per geographical mile, it gains the Tobacco Plains at the point where the Wigwam branch enters Kootanie River.

By reference to Section, No. 1, it will be seen that there are three obstacles to the passage of a railroad; namely, two mountains and one steep slope. As to the mountains, they could, I consider, without difficulty be pierced by tunnels; the great western slope is a more serious obstacle; however, in the following details I hope to show that it also may be overcome.

From the forks of Belly River on the east side, the line would traverse the gradually ascending prairie to the entrance of the pass where Railway River issues from the mountains. This river would be followed up with a grade of 1 in 180, or 34 feet per geographical mile for  $7\frac{1}{2}$  miles, the "river levels" affording considerable advantages; leaving this river it would follow the course of my track marked on the map. A cutting of about  $3\frac{1}{2}$  miles

would lead to a tunnel of nearly 5 miles in length, which would pierce the Watershed mountain, and come out in the valley of Flathead River, the whole having a grade of 1 in 130, or 47 feet per geographical mile. On emerging into the valley, the line would skirt the base of the mountains to the north of the track, thereby avoiding a steep descent, then following up the river with a grade of 40 feet per geographical mile it would reach the rise of the western ridge, at a height of 5,100 feet above the sea. This would be the culminating point of the line, from which in a distance of ten geographical miles, it has to fall 1,900 feet to the North and South Bluff, and after that, by a slope of 54 feet per geographical mile for five miles to reach the Tobacco Plains, crossing the Kootanie Fork by a bridge. This I propose to accomplish in the following manner: From the culminating point, to pierce the ridge by a tunnel of three geographical miles, and continue the line along the side of the hills to the north of the track, until reaching the North Bluff, the whole with a grade of 190 feet per geographical mile. This portion of the line of ten geographical miles, would have to be worked by a wire rope, and one or more stationary engines. Regarding the remaining five miles to the west of the North and South Bluffs, a careful survey is required to determine whether a grade not too steep for locomotives can be made. My measurements, taken with so uncertain an instrument as an aneroid barometer, must not be depended on to a few feet; they give a fall of 54 feet per geographical mile, or 1 in 112.

As regards the country to the west of the Kootanie Fork, I can say nothing, but that no mountains were visible to the distance I could see; neither have I any personal knowledge of the Saskatchewan Plains to the eastward of the forks of Belly River. But it is probable that these great prairies stretch without break from this point to the Red River settlement, and that in the construction of a railroad, little more labour would be required than that of laying down the rails. The following statement of distances to be traversed by a railroad to the Pacific within the British territories may be of interest:—

	Geog. Miles.
Lake Superior to Red River Settlement .....	320
Red River Settlement, <i>via</i> Elbow of South Branch of } Saskatchewan to Rocky Mountains .....	700
Kootanie Pass .....	40
West End of Kootanie Pass to Mouth of Fraser's River, } Gulf of Georgia .....	300
<hr/>	
Total, Lake Superior to Pacific .....	1360
Probable length of railroad, 2300 miles English.	

Thus it will be seen that out of the whole distance one half is over level prairies, and but 40 miles through mountains.

To resume the narrative of my journey: On the morning of the 25th of August, at starting we were obliged to climb the face of a steep hill-side for the purpose of keeping on the left bank of the Kootanie Fork, which here sweeps in close under an outer range of the mountains, having a north and south direction, and which I have called "Galton's Range." We gained a considerable altitude above the river, which ran at our feet, and of whose

course I had a view for some distance. The banks were vertical and rocky, and the stream appeared to continue swift. Both horses and men had enough to do in climbing up, and then coming down again from the heights. I was well repaid for my climb by the remainder of the day's travel, which was through magnificent open forests with patches of prairie, sometimes of considerable extent. These forests were the finest it had been my good fortune to see. A splendid species of pine and the larch previously spoken of, with their bright red barks, rose from the ground at ample distances; no brushwood encumbered their feet or offered impediment to the progress of wagons, which might move in every direction.

As we advanced along the prairie the trail forked, and our Indian took the branch which led nearest the river, as from information he had received, he believed it to be that which led to the trading post. Towards evening, according to my reckoning, we crossed the Boundary Line, and camped about two miles within the American territory, and not more than a mile from the river. In a few minutes, a Kootanie Indian came to us on horseback. My Indian guide "James," knowing but a few words of his language, and a little Blackfoot, and he not knowing one word of Cree, we had some difficulty in comprehending that he wished to inform us that there were no people at the trading post, which he described as being quite close. A small present of tobacco and something to eat were thankfully received by him, and he took his leave. Shortly after there came several more from the same camp, having a chief among them. They were mounted on good looking horses, and raced up to our camp as hard as they could gallop, no doubt with the idea of creating an impression. The evening was spent in a talk with them, one of them understanding Blackfoot. It was dark before they took their departure, having promised that they would meet us in the morning at the trading post, to guide us to their camp, where they wished us much to come, saying they had some provisions.

Following the track still s.s.w. the following morning in a thick fog, we came on the river, and within a few hundred yards found three diminutive log houses. Two of them, not over ten feet square, and to enter which it was necessary to crawl through a hole as an apology for a door, had evidently been used for dwellings; the other, somewhat larger, without a chimney, we were informed was the Kootanie chapel which had been erected the previous spring when a priest was there.

The Kootanies afterwards informed me that white people always come in the Fall, remaining the winter trading with them, and returning to Colville, eight or ten days' journey, in the spring. These are the Hudson's Bay Company's people, and this post is what figures on maps in large letters as "Fort Kootanie." I remained here till noon, and obtained observations, which placed the post in latitude  $48^{\circ}55'5''$  N., and longitude  $115^{\circ}31'W.$ , thus a little over five English miles south of the Boundary.

In the afternoon I rode four miles across prairie in an easterly direction with a chief, the pack animals following, and arrived at the Kootanie Camp, where I was under the necessity of shaking hands with every man, woman, and child. The people had a rather dirty and wretched appearance, but their herds of horses, and some few horned cattle, shewed that they were not poor.

Having pitched my tent at a short distance from the lodges of the Indians,

which were in a pleasant situation near a small stream with some woods along it at the base of Galton's Range, I was soon inundated with presents of berries dried and fresh, dried and pounded meat, and cow's milk. Of course, although no payment was asked, I paid these people for their food in tobacco, ammunition, &c.

Seeing that there was no chance of starving, I determined on remaining here some days for the sake of the horses; the next five days were therefore spent in trading, and exchanging horses, buying provisions, &c., and obtaining by actual observation and Indian report, such knowledge of the country as I was enabled to do.

The weather was fine, and generally calm, but rather warm, the thermometer ranging from  $47^{\circ}$  to  $82^{\circ}$  in the shade. I should have said, that in my passage over the mountains, I had experienced no cold nights, the temperature at sunrise being usually about  $50^{\circ}$ , once only so low as  $37^{\circ}$ .

I made an excursion to the north of the boundary with my sextant, to obtain as near as possible the precise position of the line; I found no remarkable feature to mark it, but noted the place where it crossed the hills. I also obtained a sketch of the mountains to the northward, Mount Sabine, (9) or as I had myself named it from its peculiar form, "The Steeples," standing out quite distinct from the rest. I may here say, that it was in the neighbourhood of this mountain, that Mr Palliser, following the old Emigrant Pass which he had entered at Bow river, emerged from the mountains after a six or eight days' journey; he then, without however coming to the mouth of the Wigwam branch of the Kootanie river, the true entrance of the pass, recrossed by the Kootanie Pass, which I had previously explored.

I found the Kootanies communicative, and from them gathered the following information:—

That Colville, an American settlement on the Columbia, was about eight or ten days' journey with pack horses, and that they could descend to it by the river in canoes, but there were too many falls and rapids to admit of its being ascended; that the Flathead River, which I followed up in the mountains, runs to the south and joins Clark's Fork of the Columbia, (in which is the Flathead Mission, which they described as three days' riding south of this; that there are large lakes to the N.W. of the Kootanie Post, from one of which a small river flows and joins the Kootanie Fork, before it falls into Clark's Fork, ✓

They also told me that there was a pass entering the mountains a little to the southward of their camp, and which came out on the east side near the Chief's Mountain; that there were long hills, but not so steep as the Kootanie Pass, and that they used it sometimes when the horses were heavily loaded. This information of another pass in a portion of the mountains that I knew should be explored, caused me at once to decide on recrossing the mountains by this pass, although I knew that it must be wholly or partially on American ground, I therefore prevailed upon a Kootanie to accompany the party across as guide.

There are some considerable tracts of the tobacco plains which are prairie; the grass however, does not grow close and thick, but in small bunches with bare ground between, and the pasture is nothing to be compared to that at the base of the mountains on the east side. ? This is perhaps chiefly owing to the nature of the soil, which in the latter case, is a black mould,



while on the tobacco plains it is sandy, and in most parts stony; at this season the grass was quite dried up and yellow,

As to the Kootanie Indians, their language at once strikes one as being most guttural and unpronounceable by a European, every word appearing to be brought up from their lowest extremities with difficulty.

They are nearly all baptized Roman Catholics, and are most particular in their attendance at morning and evening prayers, to which they are summoned by a small hand-bell. They always pray before eating. On the Sunday that I spent with them, their service, in which is a good deal of singing, lasted a considerable time; one of their number preached, and seemed to be well attended to.

Their food at this season appears to be almost entirely berries, namely, the "Saskatoon" of the Crees, a delicious fruit, and a small species of cherry; also a sweet root, which they obtain to the southward.

They grow some little wheat, and a few peas; a patch of the former, about forty yards square, which I saw near their camp, although rather small headed, looked well, a proof that this grain thrives in latitude  $49^{\circ}$  at an altitude of 2500 feet above the sea.

They possess more horses than any Indians I have seen or heard of on the east side, a camp of only six tents, having about 150 old and young. They also, in their treatment are kind to, and shew some knowledge of the animal. They are adepts at throwing the lasso, being brought up from their youth to its use. They possess a certain amount of domestic cattle, six tents having twelve or sixteen head; and I heard of some individuals at a distant camp, who owned as many as twenty or thirty each.

They are perfectly honest, and do not beg, qualities which I have never yet met with in any Indians. I extract the following from my journal, written on the spot:—"On <sup>the</sup> ~~our~~ taking leave of the Kootanies, with whom I have been camped for nearly a week, it is but justice to say, that they have behaved in a very civil and hospitable manner, and although our clothes and other articles have been lying about in all directions, we have (with the exception of some hide lines, mocassins, and other articles of leather, which the half-starved dogs have eaten) not lost a single article." Whether this honesty is to be attributed to the knowledge of Christianity spread among them by the ministers of the Roman Catholic church, or whether it is innate in them, I can only say that it is a great contrast to the effect produced by the missions in the Indian territory on the east side.

The tobacco plains form the country of the Kootanies, but every spring and fall they cross the mountains to the Saskatchewan Plains for the purpose of killing buffalo; they return with supplies of dried meat, &c., with which they trade for blankets, knives, tobacco, &c., with the Hudson's Bay Company's traders at the Kootanie Post. They also sometimes cross during the latter part of winter, when there is sufficient crust on the deep snow of the mountains, on snow shoes, also for the purpose of obtaining provisions, for there is little or no large game on the west side.

On the 2nd of September, I set out on my return journey across the mountains. The morning was clear and sharp, the thermometer being two degrees below freezing. After I had lost sight of the Kootanie camp, and was riding ahead of my party on a s.s.e. course over undulating prairie, I felt satisfied that I had done all that came under the spirit of my instructions,



and was happy to be able to recross the mountains by another unexplored route; my only regret was that this time it was not my fate to see the Pacific.

Leaving the tobacco plains at a point where they were pretty thickly wooded we followed a narrow trail, which turning the south end of Galton's Range followed up a small creek towards the north ~~end~~<sup>east</sup>. We crossed a considerable mountain stream coming down a valley from the north, which as it may be of use to the Boundary Commission, I have taken care to mark, and camped at an altitude of 4070 feet. The following day we crossed soon after starting some high land, and then descended for the remainder of the day through thick woods till we arrived in the valley of Flathead River. The day after we descended by successive steps to the Flathead River, where it is joined by a creek from the N.W., here I remained till noon for the purpose of fixing the position of this part of the river, which was just 25 miles south of where I had fallen upon it in my progress westward. Several peaks of the mountains shewed well from this valley, and I did not lose the opportunity of sketching. A storm coming on drove me to camp earlier than I had intended. We halted on the creek spoken of, and only about half a mile south of the boundary, which according to careful bearings, crosses just over a mountain, which itself has its length nearly in the exact direction of the line. Much rain fell in the afternoon and by the next morning, Sunday, had changed for snow which continued nearly all that day, giving the mountains a good white coat.

On Monday the 6th of September we regained British ground immediately on starting at 6 a.m.; we travelled up the creek till 10, when we halted for breakfast. It was cold, raw, and clouded. Here we found that the Kootanies, four men and two women, with whom we were travelling, and who had camped here on Saturday, had started this morning for the traverse of the mountains. Suspecting that we had a good day's work before us, I delayed as little as possible at breakfast, and in less than a hour and a half we were again under weigh travelling up the course of the creek, which has some picturesque falls and cascades, caused by the inclined strata of red shale and sandstone. After two or three miles we began a steep ascent, and were soon on ground entirely covered with snow, in which the tracks of the Kootanies who had gone before us were visible. We passed along the edge of a very steep hill, and it was as much as the horses or ourselves could do in some places to keep footing. We now descended, crossed a thickly wooded gully and then commenced the ascent to the water-shed, through thick wood. The snow increased in depth as we ascended, until on arriving at the crest it was two feet on the level, and in places heaped up to double that depth. It was cold work trudging through the snow in thin leather mocassins without socks; and to make matters worse it was blowing and snowing all the time. I however on arriving at the water-shed, with the assistance of the Indian "James" whom I always found most willing, unpacked the horse with the instrument boxes and obtained a reading of the barometer, which gave an altitude of 6030 feet. We ascended *along* the ridge about 100 feet more and then by a zig-zag track commenced a steep descent. It was not however very bad, and we soon arrived at a small mountain torrent flowing eastward, thus regaining the waters of the Atlantic after an absence of sixteen days. The trail continued mostly

through woods down the valley due east. The rocks on the tops of the mountains on either side were often of very curious shapes, and the strata in places much contorted; there were also some magnificent cliffs, and the cascades of snow water falling down the narrow gullies, added motion to the grandeur of the scene. The snow gradually decreased as we descended. On arriving at the spot where the valley joined another, I found the Indians camped on a patch of prairie, where I was glad enough to let my horse free, as we had travelled this day from six to six, with a halt of only  $1\frac{1}{2}$  hours.

The horses had the first half of the following day to rest, and I took the opportunity of testing my aneroid barometer by the boiling water apparatus, making the ordinary observations, and taking a sketch of a very peculiar peak just above our camp. After two hours travelling on level ground along Red-stone Creek, we emerged on the Saskatchewan Plains, just six geographical miles north of the 49" parallel, and camped at Waterton Lakes two miles east of the mouth of the pass.

The position of the Waterton Lakes, as will be seen on the plan, is just where the offset range before spoken of, strikes out to the eastward from the main chain, having the Chief's Mountain at its extremity. The uppermost and largest of these lakes, lies in a gorge in the mountains, and is crossed by the boundary line, the scenery here is grand and picturesque, and I took care to make a sketch from the narrows between the upper or southernmost and second lake.

I was here fortunate enough to discover a stunted species of pine which M. Bourgeau the botanist of the expedition had not obtained, I gave him the specimen of this as well as of some ferns and other plants which I had collected.

I was much struck by the comparative greenness of the prairies on this side, after the burned-up appearance of the Tobacco Plains, which we had left but a few days.

I remained camped at this pleasant spot two whole days for the sake of the horses, and in order to examine more carefully the nature of the country. Game was abundant, including grisly bears, and we obtained both fresh meat and fish. The trout and pike in the lakes were of large size.

The Chief's Mountain was not visible from the camp, but I obtained a good view of it from a knoll on the prairie about four miles distant, which with my previous bearings enabled me to lay it down, and curious enough, the boundary line passes just over this peculiar shaped mountain, which stands out in the plain like a landmark. I also made a sketch of it.

It will be seen that some of the waters of the Saskatchewan take their rise from the offset range at the boundary line, and from information gained from the Indians, I believe there is a tributary of the South Branch, which rises to the southward of the Chief's Mountain, this may be the Bull-pound River of Arrowsmith; if so, this offset range has nothing to do with dividing the waters of the Missouri and Saskatchewan, and some of the waters of the latter must come from American ground.

We experienced a gale of wind from the south-west, on the night of the 7th, which on the following morning ceased very suddenly, and an opposing wind from the north, brought rain and snow, which gave another coating of white to the mountains. This corner of the mountains appeared to be a very windy spot, and when it was not blowing much on the plain, a strong

breeze came from the south down the gorge in which is the upper Waterton Lake.

On the 10th of September, I turned my face towards Fort Edmonton, the previously appointed winter quarters of the Expedition, which lay more than three hundred miles to the north, and as will be seen on the plan, passed several creeks, and over a country mostly prairie. I remained at the Forks of Belly River on Sunday the 12th. From this place I visited a camp of forty-five tents of Blackfoot Indians, accompanied by one of my men, and "James" the Cree Indian. I was received with the usual hospitality, and having expressed a desire to change a horse or two, I had no trouble the following morning in exchanging one and buying another for ammunition, tobacco, blankets, old coat, &c. This tribe has the credit of being dangerous, but from what I have seen of them, I consider them far better behaved than their more civilized neighbours, the Crees. I made it a rule never to hide from Indians, and, although I had but a small party, to go to them as soon as I knew of their proximity. I also always told them for what reason the British Government had sent the Expedition to the country; and I never failed to receive manifestations of good will, neither was there one attempt made to steal my horses, a practice only too prevalent among the Indians of these plains.

I need not describe my northward journey; suffice it to say that I kept to the east of my former track, along the base of the mountains, except when I turned in for the purpose of raising the cache. I rested at Bow River on Sunday the 19th, travelled over prairie till crossing Red Deer River, the other fork of the South Branch of the Saskatchewan, on the 23rd; then, passing through a partially wooded country, which I had surveyed in the summer, arrived at Fort Edmonton on the north Branch, on the 29th September.

In this account of the return passage of the Rocky Mountains, by what I have called the Boundary Pass, I have not entered into such details as in the case of the Kootanie Pass, because, as will be seen by the accompanying plan and sections, more than one half of it lies in American ground; but I have given the same amount of attention to the mapping of it, as I considered a knowledge of that portion of the mountains would be of service to the International Boundary Commissioners at present engaged on the west side. Moreover, I do not consider the Boundary Pass so well suited for the passage of a railroad as the Kootanie Pass.

It will be perhaps noticed that I have said nothing concerning the fitness of the Kootanie Pass for a wagon road. My reason is simply that where a railroad can be constructed, a wagon road can also be made; without considerable expense a road could not be made to pass *over* the two high points (through which a railroad would tunnel) in the line of the pack-horse track followed by me; but I have no doubt by taking more circuitous routes, both of these heights might be passed by slopes adapted for wheel carriages. In other parts, the road would follow the line proposed for the railroad.

I have not mentioned the existence of two other passes across this portion of the mountains, called the Crow-Nest and Flathead Passes, the former in the British, and the latter in American Territory.

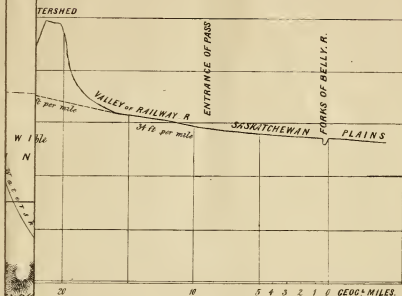
The Crow-nest Pass of which I have marked the general direction on the plan, follows up Crow-nest River, a tributary of Belly River, into the

mountains, and gains the west side near "The Steeples." By report of the natives it is a very bad road, and seldom used. I observed the old trail coming in from the plains on the left bank of Crow-nest River.

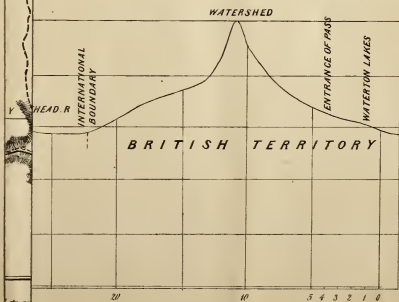
The Flathead Pass enters the mountains at the 49th parallel of latitude, follows the west shore of Lake Waterton, and gains Flathead River, which it follows to the Flathead Mission on Clark's Fork of the Columbia, about 80 miles s. by e. of the Kootanie Trading Post. It is used by the Flathead Indians when crossing to the Saskatchewan Plains for the purpose of obtaining buffalo meat.

Fort Carlton, Saskatchewan River,  
December 15, 1858.

S.



Vertical Scale 2000 feet to an inch.



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# THE KOOTANIE AND BOUNDARY PASSES OF THE ROCKY MOUNTAINS.

Explored in 1858 by  
Lieutenant (now Captain) H. H. H. H.  
Royal Artillery

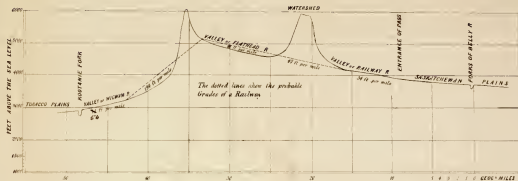


Scale of 8 Geog. Miles to an Inch

Each group of 100 feet is marked

## SECTIONS.

### Nº 1. THE KOOTANIE PASS.



Horizontal Scale 8 Geog. Miles to an inch

Vertical Scale 2000 feet to an inch

### Nº 2. BOUNDARY PASS.

